case was 5 years. Outcomes included costs, Quality-adjusted Life Years (QALYs), incremental net monetary benefit (INMB) and incremental cost-effectiveness ratio (ICER). The societal willingness-to-pay (WTP) threshold was assumed to be $100,000 per QALY and the costs were in 2012 US dollars. One-way sensitivity analyses and probabilistic sensitivity analyses were conducted to test the robustness of the model results. **RESULTS:** The 5 years' total costs per patient were estimated at $322,694, $339,457, $324,512 and $298,875 for IM IFN β-1a, fingolimod, teriflunomide, and dimethyl fumarate, respectively. The accumulated QALYs associated with each drug were 3.34, 3.69, 3.68 and 3.72, respectively. Dimethyl fumarate dominated all other therapies over the range of WTPs from $0 to $180,000. Compared with IM IFN β-1a, at the WTP of $100,000, INMBs were estimated at $18,510, $33,021, and $61,290 for fingolimod, teriflunomide, and dimethyl fumarate, respectively. Compared with IM IFN β-1a, ICERs were $47,523 and $5,218 for fingolimod and teriflunomide, respectively, and the ICER of fingolimod versus teriflunomide was $3,451,748. One-way sensitivity analysis demonstrated that model results were sensitive to the drug acquisition costs and time horizon, but in most scenarios, cost-effectiveness rankings remained stable. Probabilistic sensitivity analysis showed that for more than 90% of the simulations, dimethyl fumarate was the optimal therapy across all willingness-to-pay values. **CONCLUSIONS:** Of the four disease-modifying drugs, dimethyl fumarate was a dominant therapy to manage RRMS. Apart from dimethyl fumarate, teriflunomide was the most cost effective therapy compared with IM IFN β-1a with an ICER of $5,218.

PND21

COST-EFFECTIVENESS OF NATALIZUMAB IN PATIENTS WITH RELAPSING-REMITTING MULTIPLE SCLEROSIS IN RUSSIA

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OBJECTIVES: To determine cost-effectiveness of natalizumab compared with other disease-modifying therapies (DMT) for the treatment of relapsing-remitting multiple sclerosis (RRMS) in Russia. **METHODS:** Clinical and economical analysis was conducted using modeling (a decision tree model) and the "cost-effectiveness" method. A model was based on assumptions about the effectiveness of the compared drugs derived from the Cochrane meta-analysis by Filippini G. et al. (2013). The information on the cost treatment information of RRMS was based on the Russian standards of care. Model inputs were drug acquisition costs (wholesale acquisition cost), costs of drug administration and monitoring, costs of treating relapses. The study time frame was 2 years. An annual discount rate of 5 % was applied to costs. **RESULTS:** The overall 2-year cost of therapy per patient was 75,088 USD (2,493,682 RUB) for natalizumab (Tysabri), 47,187 USD (1,567,083 RUB) for intramuscular (IM) interferon beta-1a (Avonex), 47,075 USD (1,563,370 RUB) for subcutaneous (SC) interferon beta-1a (Rebif 44), 43,962 USD (1,459,976 RUB) for glatiramer acetate (Copaxone), and 39,826 USD (1,322,636 RUB) for interferon beta-1b (Betaferon). As a criterion of effectiveness a relative risk reduction of one or more relapses over 24 months of treatment compared with placebo was chosen (42.8 % for natalizumab, 21.6% for glatiramer acetate, 15.2% SC interferon beta-1a, 10.5% for interferon beta-1b and 3.6% for IM interferon beta-1a). The cost per relapse avoided was lowest for natalizumab at 1,754 USD (58,264 RUB), followed by 2,035 USD (67,591 RUB) for glatiramer acetate, 3,097 USD (102,853 RUB) for subcutaneous (SC) interferon beta-1a, 3,793 USD (125,965 RUB) for interferon beta-1b, and 13,108 USD (435,301 RUB) for intramuscular (IM) interferon beta-1a. **CONCLUSIONS:** Natalizumab was the most cost-effective therapy for RRMS as measured by total cost of treatment per relapse avoided.

PND22

AN ECONOMIC ANALYSIS OF WORKPLACE SCREENING FOR OBSTRUCTIVE SLEEP APNEA

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OBJECTIVES: Undiagnosed obstructive sleep apnea ("OSA") is associated with decreased workplace performance and increased mortality. While the diagnosis and treatment of OSA in symptomatic individuals is highly cost-effective, it is unknown whether screening for OSA in the workplace can be cost-effective. **METHODS:** We modeled three strategies in a hypothetical cohort of 50 year old men: (1) No screening or intervention for OSA. (2) Refer all individuals for lab-based diagnostic polysomnography, followed by continuous positive airway pressure ("CPAP") therapy in those diagnosed with OSA. (3) Screen individuals with a validated instrument (Berlin Questionnaire) delivered via email, followed by referral for polysomonography for those who screen positive and CPAP therapy in those diagnosed with OSA. Costs of managing the screening program, as well as various incentives to improve survey response, were also included in the model. Estimation of treatment benefits were taken from a previously published model (Pietzsch, *et al*). We took a societal perspective and a lifetime horizon. **RESULTS:** The incremental cost-effectiveness ratio ("ICER") for the Berlin Questionnaire strategy compared to no screening, was $41,749/QALY. By comparison, the ICER for the all-polysomnography strategy compared to no screening was $66,711/QALY. We then considered eight possible strategies to improve Berlin Questionnaire response rates and plotted them on a cost effectiveness frontier, and found that with maximum enhancement of survey response, the ICER decreased to $32,484/QALY for the Berlin Questionnaire strategy. The cost of screening (not including diagnosis) without survey enhancement was $11/person; with maximal survey enhancement, it was $40/person. One-way sensitivity analysis found that the ICER was most sensitive to the size of the screening population, the prevalence of OSA, and the clinical benefit of OSA treatment. **CONCLUSIONS:** Screening for OSA in the workplace using the Berlin Questionnaire can be cost-effective, particularly with use of survey response enhancement techniques.

PND23

COST-EFFECTIVENESS OF BOTOX VS SURGICAL INTERVENTION FOR MIGRAINE

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OBJECTIVES: Determine the cost-effectiveness of facial plastic surgery vs. OnabotulinumtoxinA for chronic migraine prophylaxis . **METHODS:** A Markov model comparing Onabotulinumtoxin A to a relatively new surgical treatment for chronic migraine headache was constructed from the payer perspective with a lifetime time horizon and one month cycle length. Efficacy and adverse event data were sourced from randomized, controlled trials of the two interventions relative to placebo or standard care, while costs came from mean wholesale pricing of OnabotulinumtoxinA and proxy surgery costs. Utility scores were obtained for four Markov health states based on monthly headache frequency1) <2, 2) 2-6, 3) 7-15, and 4) >15; and death. Subjects were assumed to start in a chronic migraine state. Costs and utility were discounted at 2%. Uncertainty was evaluated through one-way and probabilistic sensitivity analyses. All analysis was completed in Microsoft Excel 2013 (Redmond, WA). One-way sensitivity analysis was conducted using TreePlan, SensIt 1.46 (San Francisco, CA). **RESULTS:** Onabotulinum toxin A was significantly more expensive than surgery, while the two treatments had similar efficacy and surgery had fewer adverse effects. Surgical and post-surgical care costs were $7,850 (95% CI $3,500; $20,000) compared to $25,000 (95% CI $15,000; 37,000); p<0.001. Reduction in headache days was not significantly different between the interventions. A single surgical intervention for migraine has fewer side effects than quarterly OnabotulinumtoxinA treatments. Surgery dominates OnabotulinumtoxinA. **CONCLUSIONS:** Surgery should be considered for chronic migraine. Third-party payers may be hesitant to pay for surgery given the larger upfront costs, while the benefits accrue over time – when the patient may be with a different payer.

PND24

LITERATURE REVIEW OF ECONOMIC MODELS FOR THE TREATMENT OF PARKINSON'S DISEASE

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OBJECTIVES: Parkinson's disease (PD) is associated with significant patient quality of life and economic burden. Motor symptoms include bradykinesia, rigidity, and tremor, and non-motor symptoms include psychosis, dementia, depression, anxiety, and sleep disturbances. Many treatments focus on reducing motor symptoms. There is a lack of treatment options addressing non-motor symptoms even though non-motor symptoms such as psychosis and dementia have a direct impact on caregiver distress, nursing home placement and mortality. The objective of this study was to characterize published cost-effectiveness models, and to understand the extent to which they handle motor and nonmotor symptoms. **METHODS:** We conducted a targeted review of cost-effectiveness models for PD treatments, published in English since 2000. Information on model objective, structure, health states, population characteristics, time horizon, country and symptoms considered were extracted and summarized. **RESULTS:** Fifteen cost-effectiveness models published since 2000 were identified and analyzed. Thirteen used a Markov model structure; one used a decision-tree; and one was a simple cost-minimization calculation. Six of the Markov models basing their health states on the Hoehn and Yahr (HY) scale – a 5-stage scale that considers only motor symptoms. Time horizons for the models ranged from one to 25 years. Ten countries were represented; three models focused on the US. All but two models (for cell replacement therapy and deep brain stimulation) evaluated drug treatments. All models evaluated treatments' effects in terms of motor complications or motor fluctuations (on/off periods). Only one model considered the effect of treatment on a non-motor symptom (dementia). **CONCLUSIONS:** Although PD is associated with both motor and non-motor symptoms, there is a lack of cost-effectiveness models capturing treatment's effects on non-motor symptoms. This may be due to a lack of standard assessment tools as well as limited treatment options for non-motor symptoms of PD. Further research is needed in this area.

PND25

COST-EFFECTIVENESS OF DELAYED-RELEASE DIMETHYL FUMARATE COMPARED TO GLATIRAMER ACETATE AND FINGOLIMOD FOR THE TREATMENT OF RELAPSING-REMITTING MULTIPLE SCLEROSIS

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OBJECTIVES: To estimate the cost-effectiveness of delayed-release dimethyl fumarate compared with glatiramer acetate and fingolimod in treatment of relapsing-remitting multiple sclerosis (RRMS) in the US. **METHODS:** A cohort Markov model tracking patients through EDSS health states (cycle time 1 year) was developed in Excel to estimate the discounted (at 3 percent) cost and quality-adjusted life-years (QALYs) with treatment with delayed-release dimethyl fumarate compared with glatiramer acetate or fingolimod in RRMS. Patients were assumed to stop DMT when their EDSS reached 7. Population characteristics matched those in the delayed-release dimethyl fumarate phase 3 clinical trials. Untreated transition rates between the EDSS health states and annualized relapse rates were estimated using data from the placebo arms of the phase 3 clinical trials. The impact of each DMT on disease progression and annualized relapse rates was estimated using a mixed-treatment comparison analysis of clinical trial data. Costs included drug acquisition, administration, monitoring and adverse event costs as well as other costs in each EDSS health state. Utility by EDSS health state and disutility associated with adverse events were also included. One-way sensitivity analyses were performed changing input parameter values and model assumptions. **RESULTS:** Over a 10-year time horizon, compared with glatiramer acetate and fingolimod, delayed-release dimethyl fumarate increased QALYs by 0.205 and 0.156 QALYs, respectively and was less costly by $8,094 and $30,522,